CITY OF MELBA (PWS 3140070)
SOURCE WATER ASSESSMENT FINAL REPORT

January 4, 2002

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for City of Melba, Idaho,* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The City of Melba drinking water system consists of two wells. Both wells have high susceptibilities to inorganic, volatile organic, synthetic organic, and microbial contaminants. A small irrigation canal runs within 15 feet of Well #1, giving an automatic high susceptibility score to all potential contaminant categories. The analysis for Well #2 reflects the high hydrologic sensitivity and moderate system construction ratings due to the lack of a well log as well as the Waldvogel Canal, Can-Ada road, and the Union Pacific Railroad located within the 3-year time of travel (TOT) zone.

None of the wells has recorded the presence of synthetic organic or volatile organic contamination during any water chemistry tests, nor have total coliform bacteria ever been detected at the wellheads. However, total coliform bacteria have been detected in the distribution system on several occasions from November 1992 to February 2001. Additionally, in November 1992, fecal coliform bacteria were detected in the distribution system. The inorganic contaminants beryllium, chromium, and fluoride have been also detected, but at levels below the current maximum contaminant levels (MCLs) set by the Environmental Protection Agency (EPA). Arsenic has been detected in the well system in concentrations of 8 parts per billion (ppb), greater than one-half the recently revised MCL of 10 ppb In October 2001, the EPA lowered the arsenic MCL from 50 ppb to 10 ppb. However, public water systems have until 2006 to meet the new requirement. Both wells have nitrate in the water at levels below the MCL. However, Well #2 has recorded detections of nitrate concentrations greater than one-half the MCL of 10 milligrams per liter (mg/L) with a 100% statistically significant upward trend. In December 1995, nitrate concentrations in Well #2 were at 5.97 mg/L. In December 1997, concentrations were at 6.13 mg/L. The most current recorded nitrate concentration data available for Well #2, taken in June 2000, was 6.62 mg/L. In addition, the surrounding agricultural lands have led to the area being classified as a nitrate priority area as well as a priority area for the pesticides atrazine and alachlor.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the City of Melba, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Due to the new arsenic standard, the City of Melba may need to implement measures to protect their drinking water by implementing engineering controls such as reverse osmosis or ion exchange. According to a press release posted on the EPA website (www.epa.gov), the EPA intends to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new standard and provide technical assistance to small system operators. The EPA also has also stated that it "will work with small communities to maximize grants and loans under current State Revolving Fund and Rural Utilities Service programs of the Department of Agriculture." (USEPA, 2001, para 5). Engineering controls may also need to be considered to manage the nitrate concentrations in Well #2. No application or storage of herbicides, pesticides, or other chemicals is allowed within 50 feet of a public water system well. A contingency plan should be created that takes Well #1 off-line in case of any spills or releases that may occur within the nearby canal, thereby reducing the amount of potential contamination to the drinking water system. Since the delineations underlie urban and residential land, storm water drainage may be an important consideration. Much of the designated protection areas are outside the direct jurisdiction of the City of Melba, making collaboration and partnerships with state and local agencies and industry groups critical to the success of drinking water protection. All wells should maintain sanitary standards regarding wellhead protection. Should microbial contamination become a problem, appropriate disinfection practices would need to be maintained.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations contain some urban and residential land uses. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. Since the delineation of the wells of the City of Melba cross the Snake River Birds of Prey Area, the Bureau of Land Management should be included in the City's drinking water protection plans. As there are major transportation corridors through the delineations, the Idaho Department of Transportation should be involved in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the Canyon Soil Conservation District, and the Natural Resources Conservation Service.

A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR CITY OF MELBA, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are included. The list of significant potential contaminant source categories and their rankings used to develop the assessment are also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the City of Melba is comprised of two ground water wells that serve approximately 296 people through 176 connections. The wells are located in Canyon County. Well #1 is located on the northeast side of the City of Melba and Well #2 is located on the southwest side of the city (Figure 1). Water is stored in an 80,000 gallon above-ground storage tank and a hypo-chlorinator is used at Well #1 for disinfection.

Current water chemistry problems are related to the detection of the inorganic contaminants (IOCs) nitrate and arsenic. In Well #2, nitrate levels have had a significant upward trend at levels greater than one-half the MCL of 10 mg/L. In December 1995, nitrate concentrations were recorded as 5.97 mg/L. In June 1997, the concentrations were up to 6.04 mg/L and in June 2000, nitrate concentrations were recorded at 6.62 mg/L. Arsenic has been detected in the well system in concentrations of 8 ppb, greater than one-half the recently revised MCL of 10 ppb. In October 2001, the EPA lowered the arsenic MCL from 50 ppb to 10 ppb. However, public water systems have until 2006 to meet the new requirement.

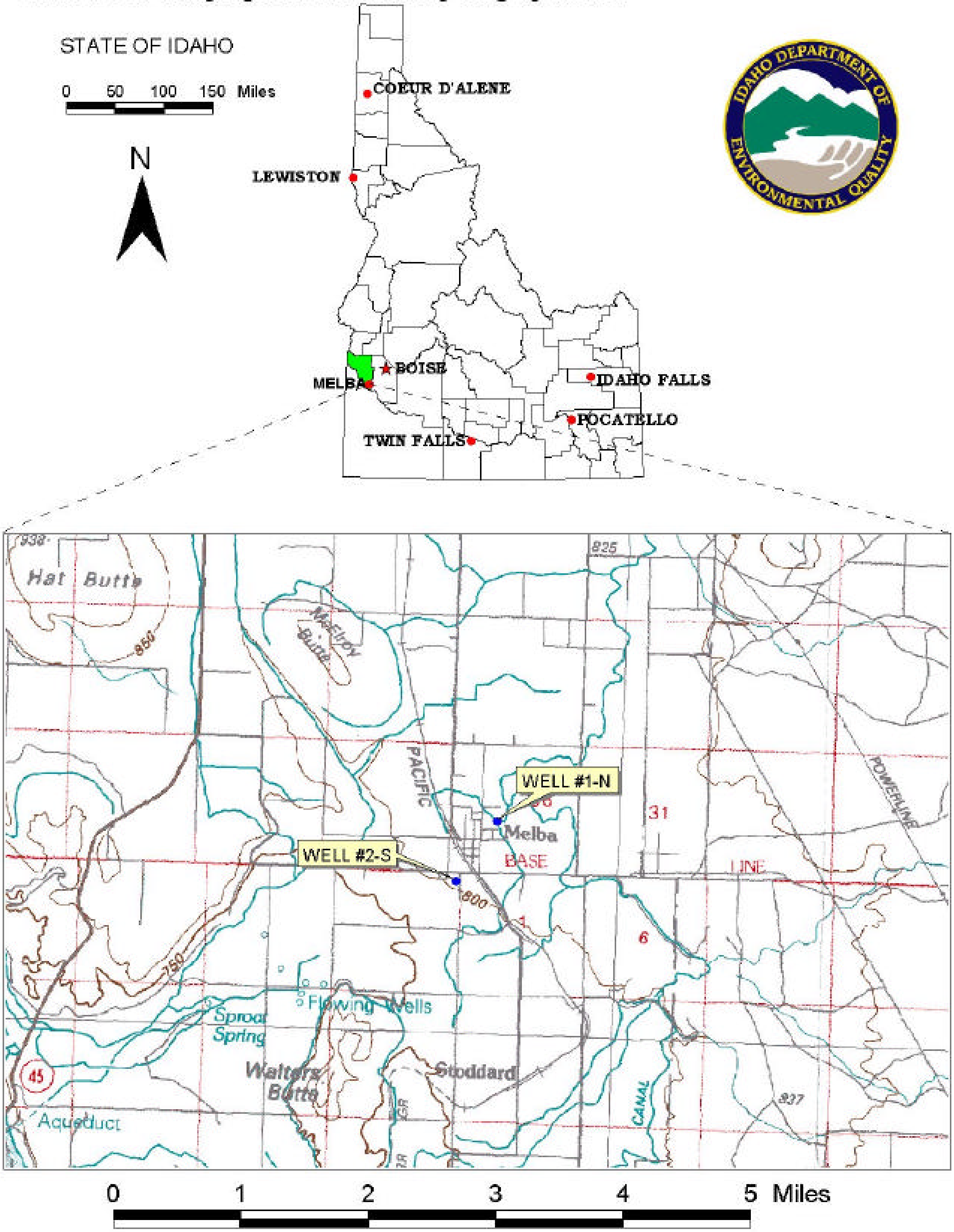
None of the wells has recorded the presence of volatile organic contaminants (VOCs) or synthetic organic contaminants (SOCs) during any water chemistry tests. Total coliform bacteria have been detected in the distribution system in a number of instances from November 1992 to February 2001. Fecal coliform bacteria were detected in the distribution system in November 1992. The IOCs beryllium, chromium, and fluoride have been detected, but at levels below the current MCLs set by EPA. The surrounding agricultural lands have led to the area being classified as a nitrate priority area as well as a priority area for the pesticides atrazine and alachlor.

Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with BARR Engineering to perform the delineations using a combination of MODFLOW and a refined analytical element computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Boise Valley aquifer in the vicinity of the City of Melba. The computer models used site specific data, assimilated by BARR Engineering from a variety of sources including the City of Melba well logs, other local area well logs, and hydrogeologic reports (detailed below).

The ground water system underlying the western part of the area is recharged with water from the Boise River. This recharge results from leakage from the many irrigation canals, laterals, and ditches that cross the area and from downward percolation of applied irrigation water. Leakage directly from the channel of the Boise River between Lucky Peak and Barber Dams also recharges the ground water system.

FIGURE 1. Geographic Location of City of Melba



The lower sand and gravel unit underlies the western portion of the area, south of Kuna. It consists of lenticular beds of poorly sorted gravel and sand with lesser amounts of silt and clay. The sediments were derived from the mountains to the north and deposited on a rolling topography by the ancient Boise River and tributary stream. These sediments are believed to provide hydraulic connection for some ground water recharge from the present Boise River. Local artesian conditions are present.

The basalt unit consists of a thick sequence of lava flows deposited from a chain of volcanoes, which paralleled the Snake River during Middle Pleistocene time. These flows filled the then existing valleys and low areas to approximately 3,000 feet elevation. The contacts between flows are vesicular or porous and broken. Cinder beds and clay lenses were deposited between many flows. The thickness of the unit varies from as little of 40 feet to as much as 600 feet. Wells commonly yield more than 2,000 gpm.

Torrential streams issuing from the mountains to the north during Upper Pleistocene time deposited the upper sand and gravel unit. The unit ranges from silt to cobble-size granite, with small amounts of basalt and metamorphic rocks. Individual beds are very discontinuous. The thickness of the unit varies widely, but is believed to be over 900 feet. The well production from this aquifer varies from 1,000 to 3,000 gpm.

Recharge to the aquifers is mainly derived from the Boise River and the New York Canal and associated irrigation. It is not believed that a significant quantity of recharge is derived from precipitation either on the mountainous regions or the plateau. Regional ground water flow is from northeast to southwest.

The delineated source water assessment areas for the City of Melba can best be described as north eastward trending corridors approximately 4 miles long and ½ mile wide (Figures 2 and 3) that cross the Snake River Birds of Prey Area and extend into the Kuna Butte area. The actual data used by BARR Engineering in determining the source water assessment delineation areas are available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of the City of Melba wellheads consists of residential and urban uses, while the surrounding area is predominantly irrigated agriculture and rangeland.

Figure 2. City of Melba Delineation Map and Potential Contaminant Source Locations

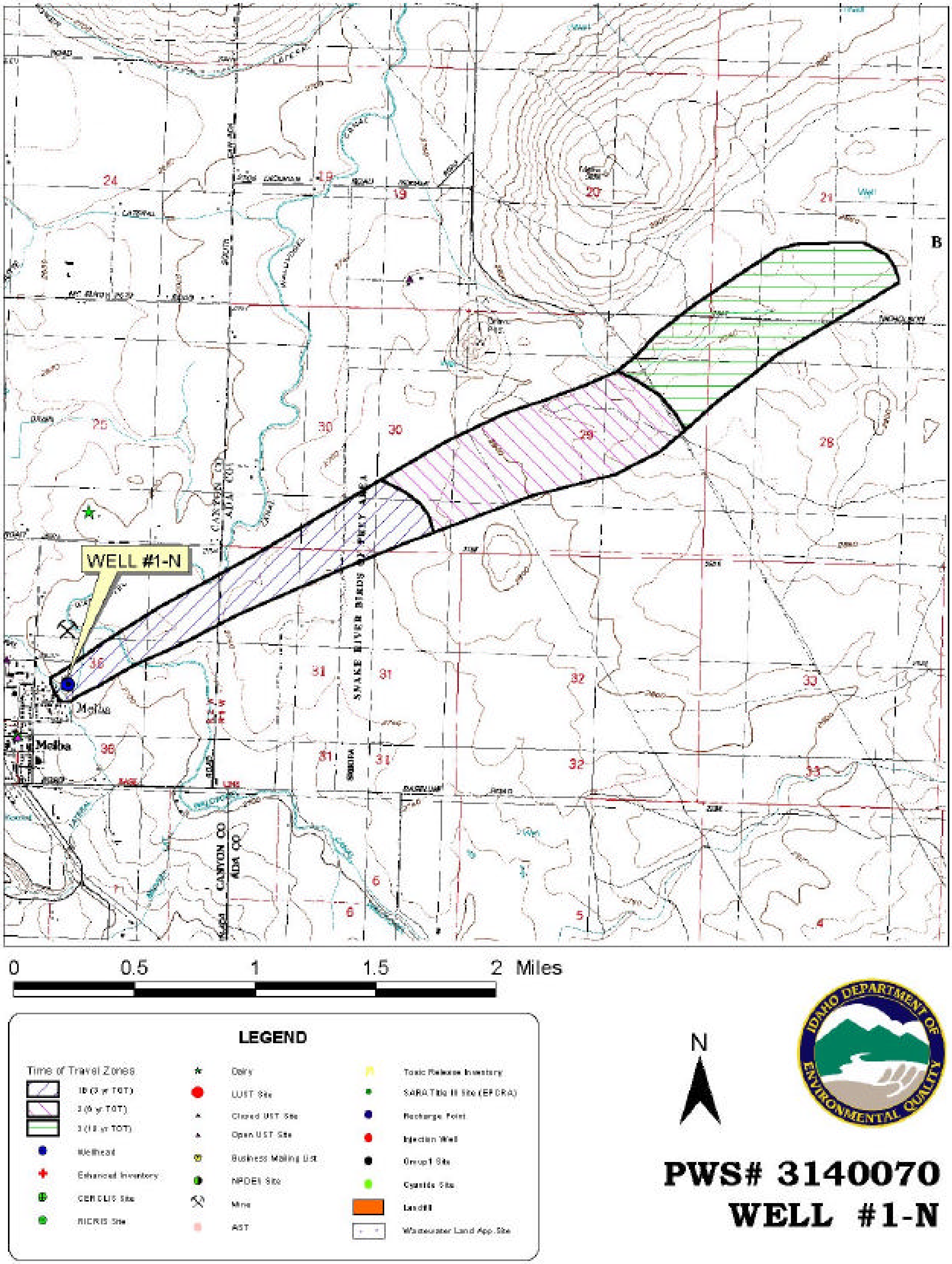
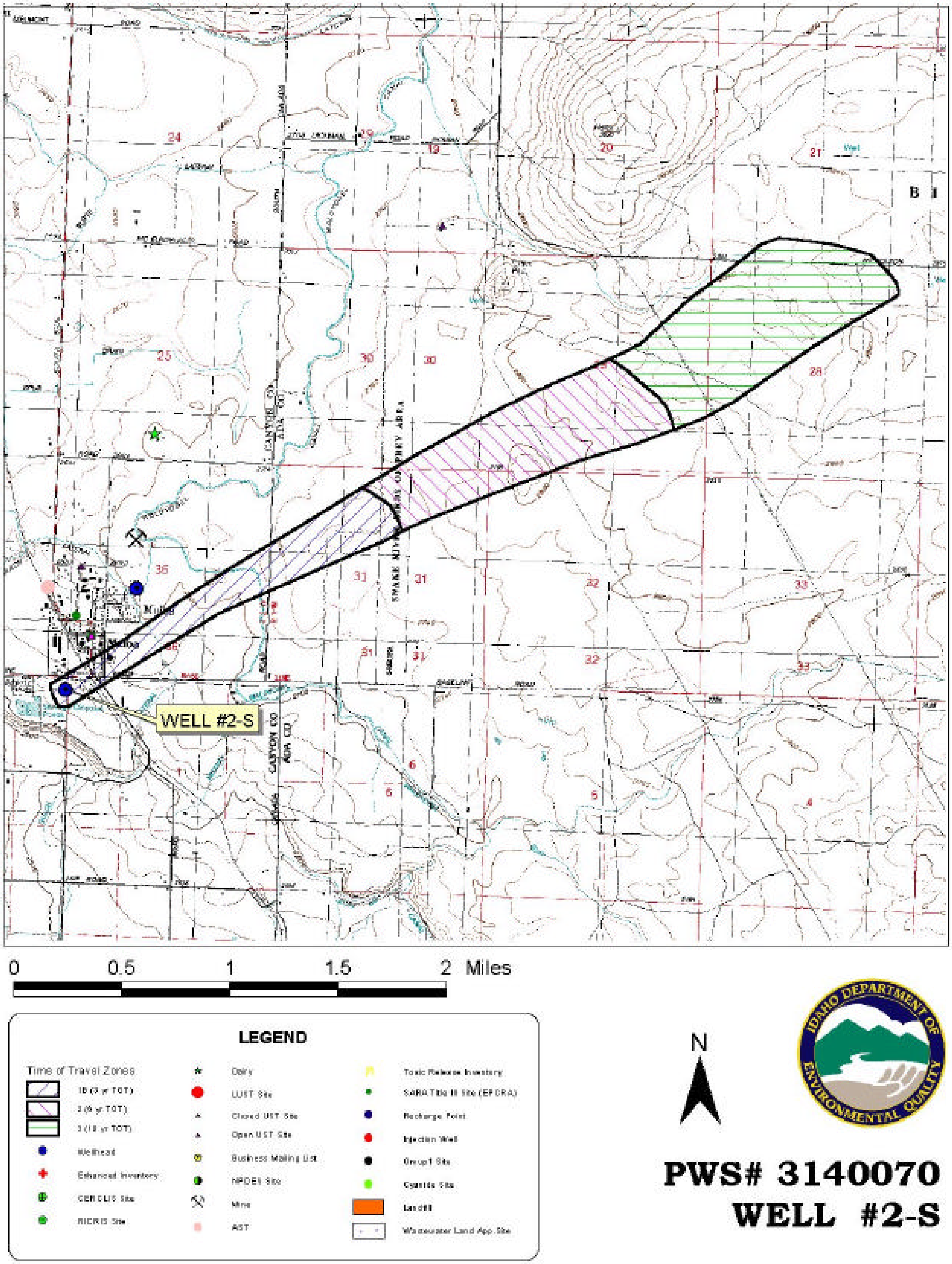


Figure 3. City of Melba Delineation Map and Potential Contaminant Source Locations



PWS# 3140070
WELL #2-S

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in October and November 2001. The first phase involved identifying and documenting potential contaminant sources within the City of Melba source water assessment areas (Figures 2 and 3) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water areas contain the Can-Ada Road and the Union Pacific Railroad as potential sources of contamination. A spill occurring on these transportation corridors could contribute all classes of contamination to the aquifer. Both well delineations also contain the Waldvogel Canal in the 3-year time of travel (TOT) zone (Table 1). Furthermore, the 1994 sanitary survey indicates that a small irrigation canal (separate from the Waldvogel Canal) lies within 15 feet of Well #1. Though not listed in the table, this source was used in assessing the susceptibility of the well.

Table 1. City of Melba Wells, Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
	Can-Ada Road	0 - 3	GIS Map	IOC, VOC, SOC, Microbes
	Union Pacific Railroad	0 - 3	GIS Map	IOC, VOC, SOC, Microbes
	Waldvogel Canal	0 - 3	GIS Map	IOC, VOC, SOC, Microbes

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

Each well's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheets. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity rating of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is high for both wells (Table 2). The well log of Well #1 indicates that the vadose zone is composed predominantly of lava rock, sand and cinder. The well log for Well #2 was unavailable. In addition, regional data shows that the area consists predominantly of moderate to well-drained soils.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey for each well was conducted in 1994.

Both wells have a moderate system construction score. Well #1, drilled in 1980, has 0.250-inch thick, 18-inch casing set to 12 feet below ground surface (bgs) into “gray brown lava” and 0.375-inch thick, 12-inch casing from 12 to 357 feet bgs into “broken lava”. The annular seal was installed to a depth of 25 feet bgs into “gray lava”. The static water table is located at about 180 feet bgs and the well is screened from 355 to 395 feet bgs. The lack of a well log for Well #2 prevented the determination of system construction details, thus increasing the score. The 1994 sanitary surveys show that the wellhead and surface seals meet standards for both wells, and the wells are both protected from surface flooding.

The available well logs allowed a determination as to whether current public water system (PWS) construction standards are being met. Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the regulations deal with screening requirements, aquifer pump tests, surface casing vent, and thickness of casing. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Eighteen-inch diameter casing and twelve-inch diameter wells both require a thickness of 0.375-inches. The wells were assessed an additional point in the system construction rating even though they may have met standards at the time of installation.

Potential Contaminant Source and Land Use

Well #1 rates moderate for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products), and SOCs (i.e. pesticides) and rates low for microbial contaminants (i.e. bacteria). Well #2 rates moderate for IOCs, VOCs, SOCs, and microbial contaminants. The transportation corridors (Can-Ada Road and Union Pacific Railroad) and the Waldvogel Canal as well as the predominant agricultural land use in the 3-year TOT contributed to the moderate scores for both wells.

The well delineations cross the Snake River Birds of Prey Area in the 6-year and 10-year TOTs. The Bureau of Land Management restricts the use of this area to protect the habitat of raptors. Therefore, to a limited degree, this land use may help protect the source water of the City of Melba.

Final Susceptibility Ranking

A detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, storing potential contaminant sources within 50 feet of a wellhead will automatically lead to a high susceptibility rating. In this case, the 1994 sanitary survey indicates the presence of a small irrigation canal within 15 feet of Well #1, giving an automatic high score for all potential contaminant categories. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, both wells rate high for all potential contaminant categories.

Table 2. Summary of City of Melba Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	M	M	M	L	M	H*	H*	H*	H*
Well #2	H	M	M	M	M	M	H	H	H	H

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical
*** = Automatic high score due to the proximity of a canal within 15 feet of the wellhead**

Susceptibility Summary

Both wells rate high total susceptibility for IOCs, VOCs, SOCs, and microbial contamination. The canal that lies within 15 feet of Well #1 gave automatic high susceptibility ratings to all potential contaminant categories. The high hydrologic susceptibility score significantly contributed to the final high scores of Well #2. The transportation corridors, the major canal, as well as the agricultural land use within the 3-year TOT of the delineations of both wells also contributed to the high ratings.

Current water chemistry problems are related to the detection of the IOCs nitrate and arsenic. In Well #2, nitrate levels have had a significant upward trend at levels greater than one-half the MCL of 10 mg/L. In December 1995, nitrate concentrations were recorded as 5.97 mg/L. In June 1997, the concentrations were up to 6.04 mg/L and in June 2000, nitrate concentrations were recorded at 6.62 mg/L. Arsenic has been detected in the well system in concentrations of 8 ppb, greater than one-half the recently revised MCL of 10 ppb. In October 2001, the EPA lowered the arsenic MCL from 50 ppb to 10 ppb. However, public water systems have until 2006 to meet the new requirement.

None of the wells has recorded the presence of VOCs or SOCs during any water chemistry tests. Total coliform bacteria have been detected on numerous occasions in the distribution system from November 1992 to February 2001. Fecal coliform bacteria were also detected in the distribution system in November 1992. The IOCs beryllium, chromium, and fluoride have been detected, but at levels below the current MCLs set by EPA. The surrounding agricultural lands have led to the area being classified as a nitrate priority area as well as a priority area for the synthetic organic pesticides atrazine and alachlor.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the City of Melba, drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). Due to the new arsenic standard, the City of Melba may need to implement measures to protect their drinking water by implementing engineering controls such as reverse osmosis or ion exchange. According to a press release posted on the EPA website (www.epa.gov), the EPA intends to provide up to $20 million over the next two years for research and development of more cost-effective technologies to help small systems meet the new standard and provide technical assistance to small system operators. The EPA also has also stated that it "will work with small communities to maximize grants and loans under current State Revolving Fund and Rural Utilities Service programs of the Department of Agriculture." (USEPA, 2001, para 5). Engineering controls may also need to be considered to manage the nitrate concentrations in Well #2. No application or storage of herbicides, pesticides, or other chemicals is allowed within 50 feet of a public water system well. A contingency plan should be created that takes Well #1 off-line in case of any spills or releases that may occur within the nearby canal, thereby reducing the amount of potential contamination to the drinking water system. Since the delineations underlie urban and residential land, storm water drainage may be an important consideration. Much of the designated protection areas are outside the direct jurisdiction of the City of Melba, making collaboration and partnerships with state and local agencies and industry groups critical to the success of drinking water protection. All wells should maintain sanitary standards regarding wellhead protection. Should microbial contamination become a problem, appropriate disinfection practices would need to be maintained.

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A community must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Boise Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Boise Regional DEQ Office	(208) 373-0550
State DEQ Office	(208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper (mlharper@idahoruralwater.com), Idaho Rural Water Association, at (208) 334-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund≅ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

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Attachment A

City of Melba
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

1. System Construction

		SCORE
Drill Date	8/18/1980	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1994
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	YES	0
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		3

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2

Potential Contaminant / Land Use - ZONE 1B

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant sources present (Number of Sources)	YES	2	2	2	2
(Score = # Sources X 2) 8 Points Maximum		4	4	4	4
Sources of Class II or III leacheable contaminants or	YES	6	2	2	
4 Points Maximum		4	2	2	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		14	10	12	8

Potential Contaminant / Land Use - ZONE II

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0

Potential Contaminant / Land Use - ZONE III

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0

	IOC Score	VOC Score	SOC Score	Microbial Score
Cumulative Potential Contaminant / Land Use Score	16	12	14	10
4. Final Susceptibility Source Score	12	11	12	13
5. Final Well Ranking	High	High	High	High

Ground Water Susceptibility Report   Public Water System Name : MELBA CITY OF   Well# : WELL #2-S
Public Water System Number 3140070   11/14/2001 10:24:52 AM

1. System Construction

		SCORE
Drill Date	1/1/1982	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1994
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		4

2. Hydrologic Sensitivity

Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A

		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		2	2	2	2

Potential Contaminant / Land Use - ZONE 1B

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant sources present (Number of Sources)	YES	3	3	3	3
(Score = # Sources X 2) 8 Points Maximum		6	6	6	6
Sources of Class II or III leacheable contaminants or	YES	7	3	3	
4 Points Maximum		4	3	3	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	13	15	10

Potential Contaminant / Land Use - ZONE II

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0

Potential Contaminant / Land Use - ZONE III

		IOC Score	VOC Score	SOC Score	Microbial Score
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0

	IOC Score	VOC Score	SOC Score	Microbial Score
Cumulative Potential Contaminant / Land Use Score	18	15	17	12
4. Final Susceptibility Source Score	14	13	13	14
5. Final Well Ranking	High	High	High	High